Alessandro Casa

CONTACT INFORMATION

🎓 Faculty of Economics and Management, Free University of Bozen-Bolzano
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RESEARCH INTERESTS

Latent variable models; Nonparametric statistics; Clustering; Computational statistics; Density estimation; Dimensionality reduction techniques; Graphical models; Chemometrics; Bayesian statistics.

CURRENT POSITION

Assistant Professor of Statistics   since Jan. 2022
Faculty of Economics and Management, Free University of Bozen-Bolzano
Ricercatore SECS-S/01, Legge 240/10 tipo A

PAST POSITIONS

Postdoctoral research fellow   Mar. 2020 - Dec 2021
School of Mathematics and Statistics, University College Dublin
Affiliated with: Vistamilk SFI Research Centre
                 Insight SFI Research Centre for Data Analytics
Supervisor: Prof. T.B. Murphy

Research Assistant Pending Viva   Nov. 2019 - Feb. 2020
School of Mathematics and Statistics, University College Dublin
Affiliated with: Vistamilk SFI Research Centre
                 Insight SFI Research Centre for Data Analytics

EDUCATION

Ph.D. in Statistics   Oct. 2016 - Feb. 2020
University of Padova
Thesis: *Climbing modes and exploring mixtures: a journey in density-based clustering*
Supervisor: Prof. G. Menardi and Prof. J.E.Chacòn (co-supervisor)

Master degree in Statistical Sciences   Oct. 2014 - Sept. 2016
University of Padova
Final grade: 110/110 cum laude
Thesis: *Semi-supervised detection of collective anomalies using non-parametric methods with an application to particle physics* (written in italian)
Supervisor: Prof. G. Menardi

Bachelor degree in Statistics, Economics and Finance   Oct. 2011 - July 2014
University of Padova
Final grade: 110/110 cum laude
Thesis: *Dimension reduction for model-based clustering: a simulation study and an application to genetic data* (written in italian)
Supervisor: Prof. G. Menardi

VISITING PERIODS

University of Cote d'Azur   Oct. 2018 - Dec. 2018
Laboratory J.A. Dieudonnè
Visiting scholar under the supervision of Prof. C. Bouveyron

University of Perugia   Apr. 2018
Department of Economics
Visiting scholar under the supervision of Prof. L. Scrucca

University of Cambridge   Oct. 2017 - Dec. 2017
Department of Pure mathematics and Mathematical Sciences
Visiting scholar under the supervision of Prof. R. Samworth

CONFERENCES
PRESENTATIONS

- CMStatistics 2021 - 14th ERCIM WG
  Online [Invited talk]   Dec. 2021

- WG21 - Working Group on Model-Based Clustering
  Athens [Short talk]   Oct. 2021

- CLADAG - Classification and Data Analysis Group
  Online [Talk]   Sept. 2021

- SIS - 50th Scientific meeting of the Italian Statistical Society
  Online [Talk]   Jun. 2021

- CASI - 41st Conference on Applied Statistics in Ireland
  Online [Talk]   May 2021

- UCD Working Group on Statistical Learning
  Online [Invited seminar]   Feb. 2021

- UCD Working Group on Statistical Learning
  Dublin [Invited seminar]   Feb. 2020

- CLADAG - Classification and Data Analaysis Group
  Cassino [Invited talk]   Sept. 2019

- EMS - European Meeting of Statisticians
  Palermo [Invited talk]   Jul. 2019

- WG19 - Working Group on Model-Based Clustering
  Wien [Poster]   Jul. 2019

- ASPD - Workshop on Advanced Statistics for Physics Discovery
  Padova [Poster]   Sept. 2018

- MBC2 - Workshop on Model-Based Clustering and Classification
  Catania [Poster]   Sept. 2018

- ECDA - European Conference on Data Analysis
  Paderborn [Talk]   Jul. 2018

- SIS - 49th Scientific meeting of the Italian Statistical Society
  Palermo [Talk]   Jun. 2018

- ISNPS - 4th Conference of the International Society for Nonparametric Statistics
  Salerno [Talk]   Jun. 2018

- SIS - Intermediate conference of the Italian Statistical Society
  Florence [Talk]   Jun. 2017

Other presentations
- Vistamilk Annual Conference
  Online   Mar. 2021

- Vistamilk SFI Site Review
  Online   Oct. 2020

- Start Up Research - Follow up presentation (joint with A.Cabassi)
  Palermo   Jun. 2018

TEACHING AND SUPERVISION

Teaching Experience

University College Dublin
- Lecturer STAT20060 - Statistics & Probability
  Level 2, Academic year 2019/2020.

- Teaching assistant STAT30270 - Statistical Machine Learning
  Level 3, Academic year 2019/2020.

- Teaching assistant STAT20060 - Statistics & Probability
  Level 2, Academic year 2019/2020.

University of Padova
- *Bike sharing in Paris: a case study* (in italian).
  Specialist lecture during the class Statistica Iterazione
  Master degree, Academic year 2018/19.

Supervising Experience
- MSc Thesis co-supervision: Giulia Pascali (University of Padova, a.y. 2018/19, supervisor: Giovanna Menardi)

SERVICE

Referee for
- Annals of Applied Statistics, Computational Statistics and Data Analysis, Journal of Computational and Graphical Statistics, Journal of Dairy Science, Knowledge-based Systems, Mathematics, Scientific Reports, Social Indicators Research, Stat, Statistical Analysis and Data Mining, Statistics and Computing, WIREs Computational Statistics.

Organization of Scientific Events
- Academic Lead of the organizing committee of the inaugural edition of the *International Workshop on Spectroscopy and Chemometrics* (Online, April 2021)

- Co-organizer of the Vistamilk Infrared Spectroscopy group monthly meeting (July 2020 - now)

Membership
- Irish Statistical Association (ISA)
- Società Italiana di Statistica (SIS)

Service to university
- Elected representative of Ph.D. students and Postdoctoral researchers in the Faculty Board (University of Padova)   2016-2020
- Elected representative of Ph.D. students in the Doctoral Board of the Grad School (University of Padova)   2016-2019

EVENTS

- Start Up Research - Follow up   Jun. 2018
  Follow up meeting where the research groups present and discuss the scientific output of their works after one year of research

- Start Up research   Jun. 2017
  Meeting where small research groups of young scholars, advised by senior researchers, are asked to develop innovative methods and models to analyze a common dataset

- Stats Under the Stars 3   Jun. 2017
  Organizers: University of Florence, Italian Statistical Society

- Stats Under the Stars 1   Sept. 2015
  Organizers: University of Padova, Italian Statistical Society

- Data Science Game   Jun. 2015
  Organizers: Google, Capgemini

COMPUTER SKILLS

OS and Applications: Mac OS, Microsoft Windows, Linux, OpenOffice
Programming languages: R (advanced), Python, SQL, Stata, SAS, C/C++
Markup: LaTeX, HTML, Markdown

PUBLICATIONS

Working papers

- Ferraccioli, F., **Casa, A.** & Stefanucci, M.
  Adaptive functional regression for spectroscopy data

- Cappozzo, A., **Casa, A.** & Fop, M.
  Variable selection for matrix-variate model-based clustering via penalized estimation

- **Casa, A.**, Murphy, T.B. & Fop, M.
  Penalized partial membership models for food authentication and detection of adulterated regions

Submitted preprints

- **Casa, A.**, Cappozzo, A. & Fop, M. (2021+)
  Group-wise shrinkage estimation in penalized model-based clustering
  Preprint available at: `https://arxiv.org/pdf/2105.07935.pdf`

Articles in refereed journals

- **Casa, A.**, O'Callaghan, T.F. & Murphy, T.B. (2021+)
  Parsimonious Bayesian Factor Analysis for modelling latent structure in spectroscopy data.
  Accepted for publication in Annals of Applied Statistics
  Preprint available at: `https://arxiv.org/pdf/2101.12499.pdf`

- Frizzarin, M., Gormley, I.C., **Casa, A.** & McParland, S. (2021)
  Selecting milk spectra to develop equations to predict milk technological traits
  Foods, 10(12), 3084

- Stakia, A., Dorigo, T., Banelli, G., Bortoletto, D., **Casa, A.**, de Castro, P., Delaere, C., Donini, J., Finos, L., Gallinaro, M., Giammanco, A., Held, A., Jimenez Morales, F., Kotkowski, G., Liew, S.P., Maltoni, F., Menardi, G., Papavergou, I., Saggio, A., Scarpa, B., Strong, G.C., Tosciri, C., Varela, J., Vischia, P. & Weiler, A. (2021)
  Advanced multi-variate analysis methods for new physics searches at the Large Hadron Collider
  Accepted for publication in Reviews in Physics
  Preprint available at: `https://arxiv.org/pdf/2105.07530.pdf`

- Frizzarin, M., Bevilacqua, A., Dhariyal, B., Domijan, K., Ferraccioli, F., Hayes, E., Ifrim, G., Konkolewska, A., Le Nguyen, T., Mbaka, U., Ranzato, G., Singh, A., Stefanucci, M. & **Casa, A.** (2021).
  Mid infrared spectroscopy and milk quality traits: a data analysis competition at the "International Workshop on Spectroscopy and Chemometrics 2021"
  Chemometrics and Intelligent Laboratory Systems, 219, 10442

- **Casa, A.**, Bouveyron, C., Erosheva, E. & Menardi, G. (2021)
  Co-clustering of time-dependent data via the Shape Invariant Model
  Journal of Classification, 38, 626-649

- Frizzarin, M., O'Callaghan, T.F., Murphy, T.B., Hennessy, D. & **Casa, A.** (2021)
  Application of machine learning methods to milk mid infrared spectra for discrimination of cows milk from pasture or TMR diets
  Journal of Dairy Science, 104(12), 12394-12402

- **Casa, A.** & Menardi, G. (2021)
  Nonparametric semi-supervised classification with application to signal detection in high energy physics.
  Statistical Methods & Applications
  `https://doi.org/10.1007/s10260-021-00585-3`

- Frizzarin, M., Gormley, I.C., Berry, D.P., Murphy, T.B., **Casa, A.**, Lynch, A. & McParland, S. (2021)
  Predicting dairy cow milk quality traits from routinely available milk spectra using statistical machine learning methods.
  Journal of Dairy Science 104(7), 7438–7447

- **Casa, A.**, Scrucca, L. & Menardi, G. (2021).
  Better than the best? Answers via model ensemble in density-based clustering.
  Advances in Data Analysis and Classification 15, 599-623

- **Casa, A.**, Chacón, J.E. & Menardi, G. (2020)
  Modal clustering asymptotics with applications to bandwidth selection.
  Electronic Journal of Statistics 14(1), 835–856

- **Casa, A.** (2018)
  On the choice of the weight function for the integrated likelihood.
  SM Journal of Biometrics & Biostatistics, 3(3), 1033

Discussions
- **Casa, A.**, Fop, M. & Murphy, T.B. (2021)
  Contributed discussion on: "Centered partition processes; informative priors for clustering" by Paganin, S., Herring, A.H., Olshan, A.F. & Dunson, D.B.
  Bayesian Analysis 16(1), 301–370

Book chapters
- Cabassi, A., **Casa, A.**, Farcomeni, A., Fontana, M., Russo, M. (2018).
  Three testing perspectives on connectome data.
  Studies in Neural Data Science, Springer Volume 'Proceedings in Mathematics & Statistics', ISBN-9783030000394.

Refereed conference proceedings
- **Casa, A.**, Bouveyron, C., Erosheva, E. & Menardi, G. (2021)
  Model-based co-clustering of multivariate time-dependent data
  Book of Abstract, CFE-CMStatistics 2021, ISBN 978-9925-7812-5-6

- Cappozzo, A., **Casa, A.** & Fop, M. (2021)
  Model-based clustering with sparse matrix mixture models.
  CLADAG 2021 - Book of abstract and short papers.
  DOI: 10.36253/978-88-5518-340-6

- Cappozzo, A., **Casa, A.** & Fop, M. (2021)
  Penalized model-based clustering for three-way data structures.
  Book of short papers - SIS 2021. ISBN 9788891927361

- **Casa, A.**, O'Callaghan, T.F. & Murphy, T.B. (2021)
  Parsimonious modelling of spectroscopy data via a Bayesian latent variables approach.
  Book of short papers - SIS 2021. ISBN 9788891927361

- **Casa, A.**, Chacòn, J.E. & Menardi, G. (2019)
  Asymptotics for bandwidth selection in nonparametric clustering.
  Cladag 2019 - Book of short papers. ISBN 9788883171086

- **Casa, A.** & Menardi, G. (2019)
  Nonparametric semisupervised classification and variable selection for new physics searches.
  EMS 2019 - Program and Book of Abstracts.

- Pascali, G., **Casa, A.** & Menardi, G. (2019)
  Co-clustering TripAdvisor data for personalized recommendations.
  Book of short Papers SIS 2019. ISBN 978889191510.

- **Casa, A.**, Scrucca, L. & Menardi, G. (2018)
  Averaging via stacking in model-based clustering.
  Book of abstracts of the 4th International Workshop on Model-Based Clustering and Classification (MBC2)

- **Casa, A.**, Scrucca, L. & Menardi, G. (2018)
  On the selection uncertainty in parametric clustering.
  Book of abstracts of the European Conference on Data Analysis (ECDA)

- **Casa, A.**, Chacòn, J.E. & Menardi, G. (2018)
  On the choice of an appropriate bandwidth for modal clustering.
  Book of short Papers SIS 2018. ISBN 9788891910233

- **Casa, A.**, Chacòn, J.E. & Menardi, G. (2018)
  Clustering-oriented selction of the amount of smoothing in kernel density estimation.
  Book of abstracts - ISNPS 2018. ISBN 9788861970 007

- **Casa, A.** & Menardi, G. (2017)
  Signal detection in high energy physics via a semisupervised nonparametric approach.
  Proceedings of the Conference of the Italian Statistical Society "Statistics and Data Sciences: new challenges, new generations". ISBN 9788864535210

- **Casa, A.** & Menardi, G. (2017)
  Nonparametric semi-supervised classification with application to signal detection in high energy physics.
  Books of abstracts of the International Federation of Classification Societies (IFCS)